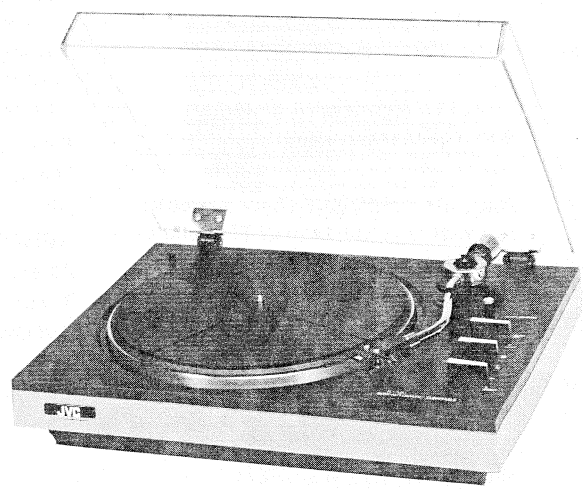
JVC

SERVICE MANUAL

MODEL JL-A20

AUTO-RETURN TURNTABLE



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Specifications

MOTOR AND TURNTABLE

Drive System:	Belt drive system
Drive Motor:	4 poles synchronous motor
Speeds:	33-1/3 and 45 rpm
Wow and Flutter:	Less than 0.06% (WRMS)
Signal to Noise Ratio:	Better than 53dB (IEC-B) 63dB (DIN-B)
Platter:	12-inch(30cm) diameter die-cast aluminum alloy

TONEARM

Type:	Statically-balanced S-shaped tubular arm with JVC-developed TH balancing system and with tracking force dial of 0.1 gram steps
Effective Arm Length:	220mm
Overhang:	15mm
Applicable Tracking Force Range:	0 to 3 grams

CARTRIDGE

Type:	Moving magnet (MD-1025)
Stylus:	0.5mil, diamond Model DT-Z1S for stereo and Model 4DT-Z1S for discrete 4-channel
Optimum Tracking Force:	1.5 to 2.0 grams (DT-Z1S) 1.5 to 2.0 grams (4DT-Z1S)
Output:	3mV (1kHz)
Frequency Responce:	10 to 25,000Hz
Separation:	Better than 25dB (1kHz)
Load Resistance:	47 to 100kohms
Compliance:	25 x 10^{-6} cm/dyne

FEATURES

Tonearm lifter, Auto-return mechanism, Removable dust cover, Anti-skating device, etc.

GENERAL

Power Source:	Refer to Table 2 at the back cover
Power Consumption:	Refer to Table 2 at the back cover
Dimensions:	46(W) x 36.8(D) x 13(H) cm (18-1/8 x 14-1/2 x 5-1/8 inch)
Weight:	6.0kg (13.2 lbs)

Setting Up

1. Remove main weight (A).
2. Remove two platter protectors (B), screw (C) and caution tag (D).
3. Untie vinyl ribbon (E).
4. Pass the belt behind the shift lever and place it on the motor pulley.
5. Place the platter pat provided on the turntable platter.

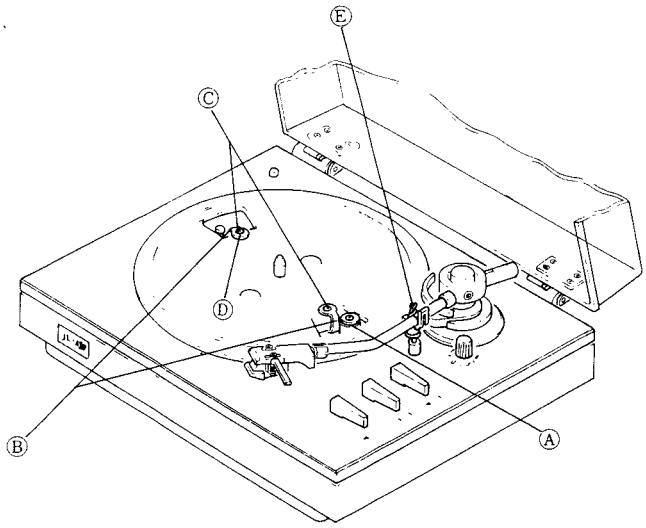


Fig. 1

Operation of Automatic Mechanism

Change cycle mechanism:

1. During playing, the notch of the main gear position relative to the turntable spindle gear is as shown in Fig. 2. As the projection is away from the engagement, the main gear does not rotate even though the turntable.
2. As playing proceeds, the trip slide moves toward the center of the turntable following the movement of the tonearm as shown in Fig. 3.
3. The engagement is very easy to move as it simply rests on the lower trip. On the music section of the record groove the engagement moves so slightly that it is returned by the tip of the projection. Consequently, the turntable spindle gear does not engage with the main gear and thus does not trigger the auto-return operation.
4. When playing ends and the pick-up cartridge enters the lead-out groove which is spaced out, the engagement advances more then it is returned by the projection. Because of this, the engagement is pressed by the projection as shown in Fig. 4, causing the main gear to turn and engage with the turntable spindle gear. Thus the change cycle is started.
5. During the return operation the engagement and lower trip which have moved are returned to their original position by the reject lever coming into contact with the bottom of the lower trip. At this moment the switch lever operates with the help of the main gear cam, switching off the power just before the rotation should stop. This completes the automatic cycle.

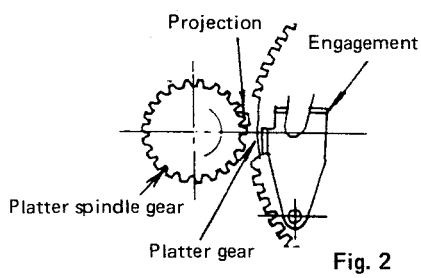


Fig. 2

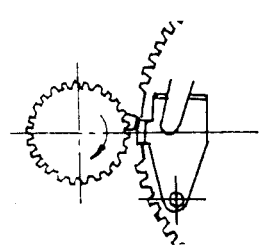


Fig. 3

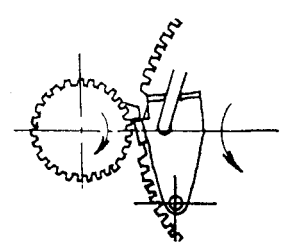


Fig. 4

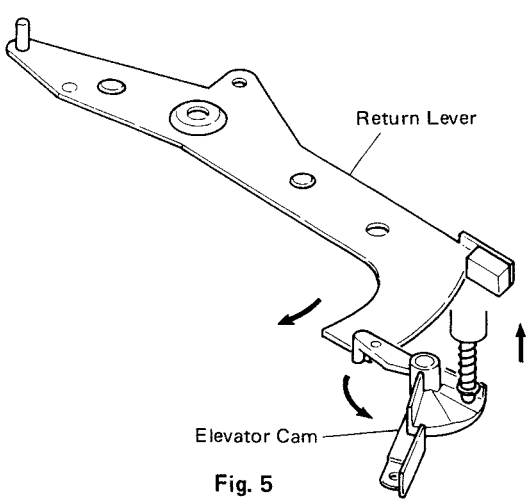


Fig. 5

Tonearm lift and return mechanism:

1. When the main gear starts to rotate at the end of playing, the return lever rotates under the action of the main gear cam to press the elevator cam. The upward movement of the elevator cam is directly converted into movement of the elevator, lifting up the tonearm. (Fig. 5)
2. The tonearm is returned by the arm lever the end of which presses it as the main gear rotates. (Fig. 6)

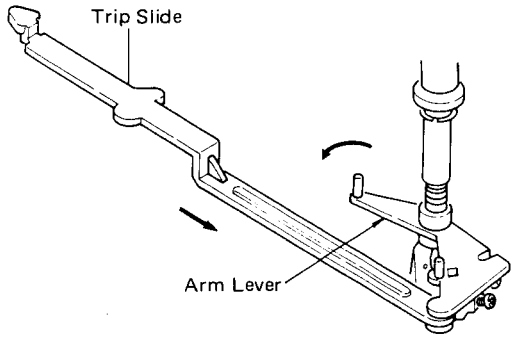


Fig. 6

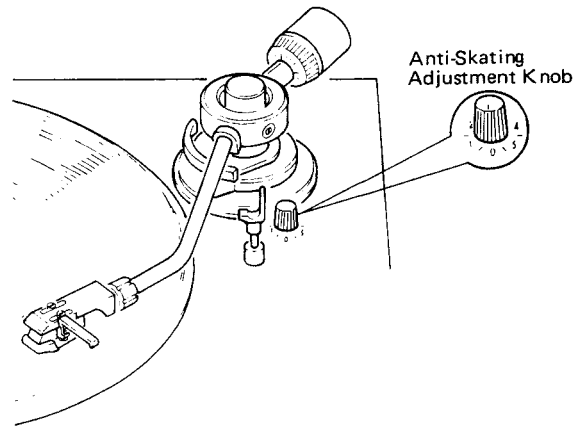


Fig. 8

Adjustments

* Tracking force:

1. Lower the elevator and remove the tonearm from the arm rest. The anti-skating dial should be adjusted to "0".
2. Turning the main weight, balance the tonearm with the stylus tip at the level of the record surface.
3. Holding the main weight so it does not move, turn the tracking force dial to bring its "0" to the index line on the weight shaft.
4. Turn the main weight clockwise (so that it moves forward) to adjust the tracking force. (Fig. 7)

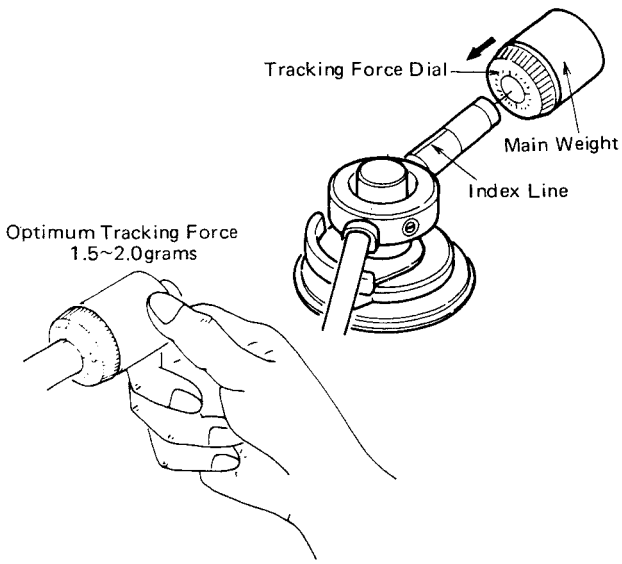


Fig. 7

* Anti-skating

Anti-skating adjustment is done depending on the tracking force. The figures on the dial indicate tracking forces. Set it to the same value to which the tracking force is adjusted. (Fig. 8)

* Stylus height:

The optimum position of the stylus is between 6 - 10mm from the record surface when a single record is placed on the turntable and the arm elevator is lifted. Turning the adjustment screw clockwise lowers the stylus height and turning it counterclockwise raises the stylus height. (Fig. 9)

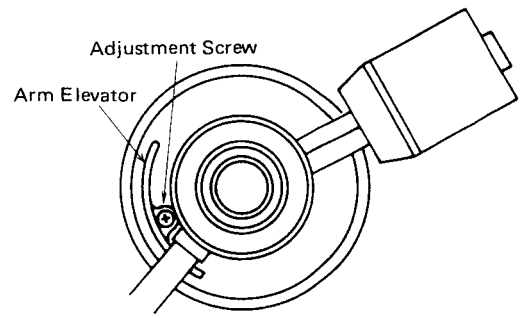


Fig. 9

* Auto-return (lead-out) timing:

When the pulley has been replaced for a different record or if auto-return functions early, adjust as shown in Fig. 10.

- When change cycle starts too late, turn the screw counterclockwise with a screwdriver.
- When change cycle starts too early, turn the screw clockwise.

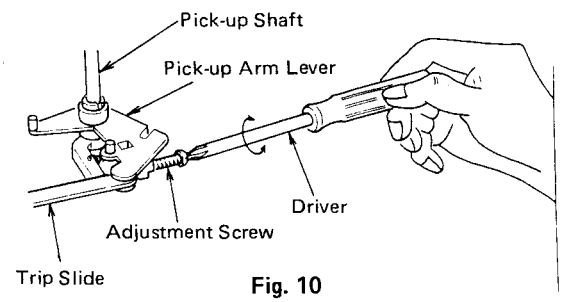


Fig. 10

Replacement of Parts

1. Cartridge

1. Unscrew the connector nut to remove the headshell.
2. Remove the two long screws on the headshell which hold the cartridge.
3. Connect the lead wires of the headshell to the new cartridge, being careful to match the polarities correctly. Polarity and wire colors are as follows:
   White (+) ..... L Red (+) ..... R
   Blue (-) ..... LE Green (-) ..... RE
4. Attach the cartridge to the headshell squarely, and gently tighten the screws.
5. Set the cueing lever to "DOWN", and then bring the stylus tip to the overhang indicator by sliding the cartridge back and forth.
   After the adjustment, fix it firmly.
6. After attaching the cartridge, slide the headshell into the tonearm with the connector pin fitting in the groove. Tighten the connector nut.
7. Be sure to adjust the tracking force and lead-in position after replacing the cartridge.

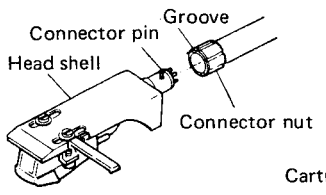


Fig. 11

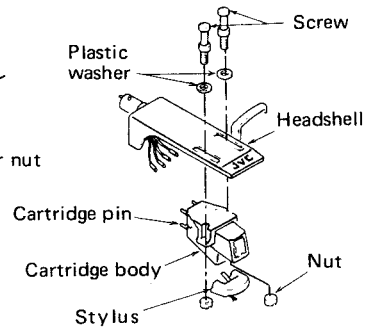


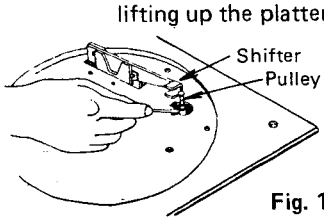
Fig. 12

2. Pulley

The motor R.P.M. of a platter will vary greatly depending on the frequency of the power source. Replace the pulley If you use a turntable at a different frequency.
(There is no need to alter the wiring of the motor.)

1. Remove the platter.
2. When you replace the pulley, adjust the height of the new pulley so that the center of the shifter is as shown in Fig. 13 when the speed selector knob is set to "33".

Caution: Be sure to remove the drive belt from the pulley before removing the platter.
It is difficult to lift up the platter if it fits firmly on the center shaft.
In such a case, tap the top of the center shaft gently with the handle of a screwdriver while lifting up the platter.



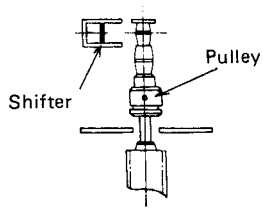


Fig. 13

Note: Difference between 50Hz and 60Hz pulleys is illustrated in Fig. 14.

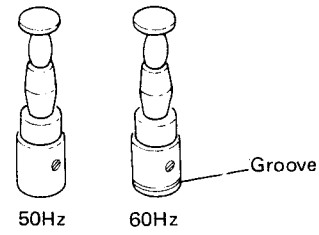


Fig. 14

Voltage Setting

(In U.S.MILITARY MARKET and OTHER AREAS)

As with most A.C. motors, the JL-A20's motor has to be set to the proper line voltage.
When it is used at a different line voltage, set it to "110" in areas with power line voltages from 110V to 120V and "230" in 220V to 240V areas.
The line voltage setting switch is located at the circuit board (TSC-60C), which is found by removing the bottom board (E10147-001). Slide the switch to the proper position.

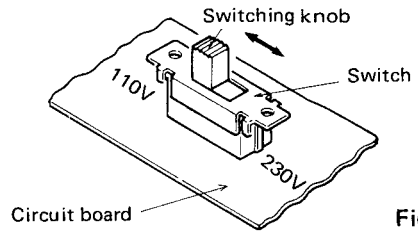


Fig. 15

Lubrication

The motor incorporated in this model can be used for 800 – 1,600 hours without lubrication because of its heavy-duty oil reservoir.
Use a high quality sewing machine oil to lubricate the pulley shaft (A) as shwon in Fig. 16 for every 1,000 – 2,000 hours of operation under normal use. Be sure to unplug the power cord before lubrication. For professional or frequent use, lubricate once or twice a month.

* Be sure to remove the drive belt from the pulley before removing the platter.
  Hit the top of the center shaft gently with the handle of a screwdriver if the platter is firmly connected to the center shaft.
* Be careful not to stain the pulley, belt or platter with oil. If stained, clean with alcohol.

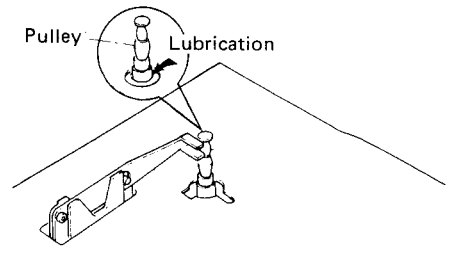


Fig. 16

Exploded View of Parts ①

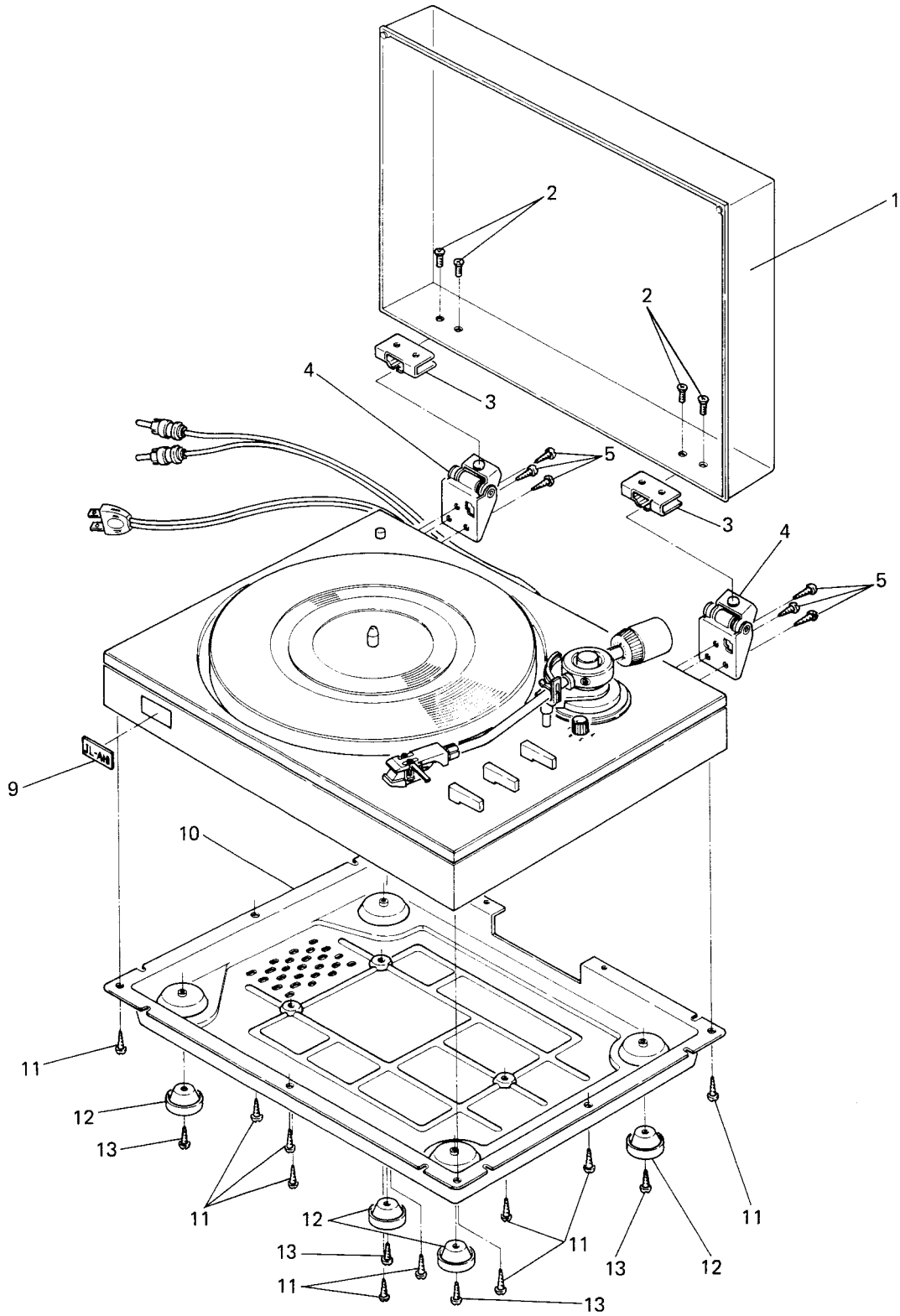


Fig. 17

List of Parts for Replacement ①

NO.	PARTS NO.	PARTS NAME	REMARKS	Q'TY
1	E10036-002	Dust Cover	W/Lock Plate	1
2	SHSP3010RS	Screw		4
3	E60990-001	Lock Plate		2
4	E60989-001	Hinge Assy		2
5	SSSB3010M	Tapping Screw		6
9	*QXM2241-001	Mark		1
10	*E10147-001	Bottom Board		1
11	SBSB3012M	Tapping Screw		11
12	E60964-002	Foot Assy		4
13	SBSB3008M	Tapping Screw		6

Note : * New Parts Item

Memo

Exploded View of Parts ②

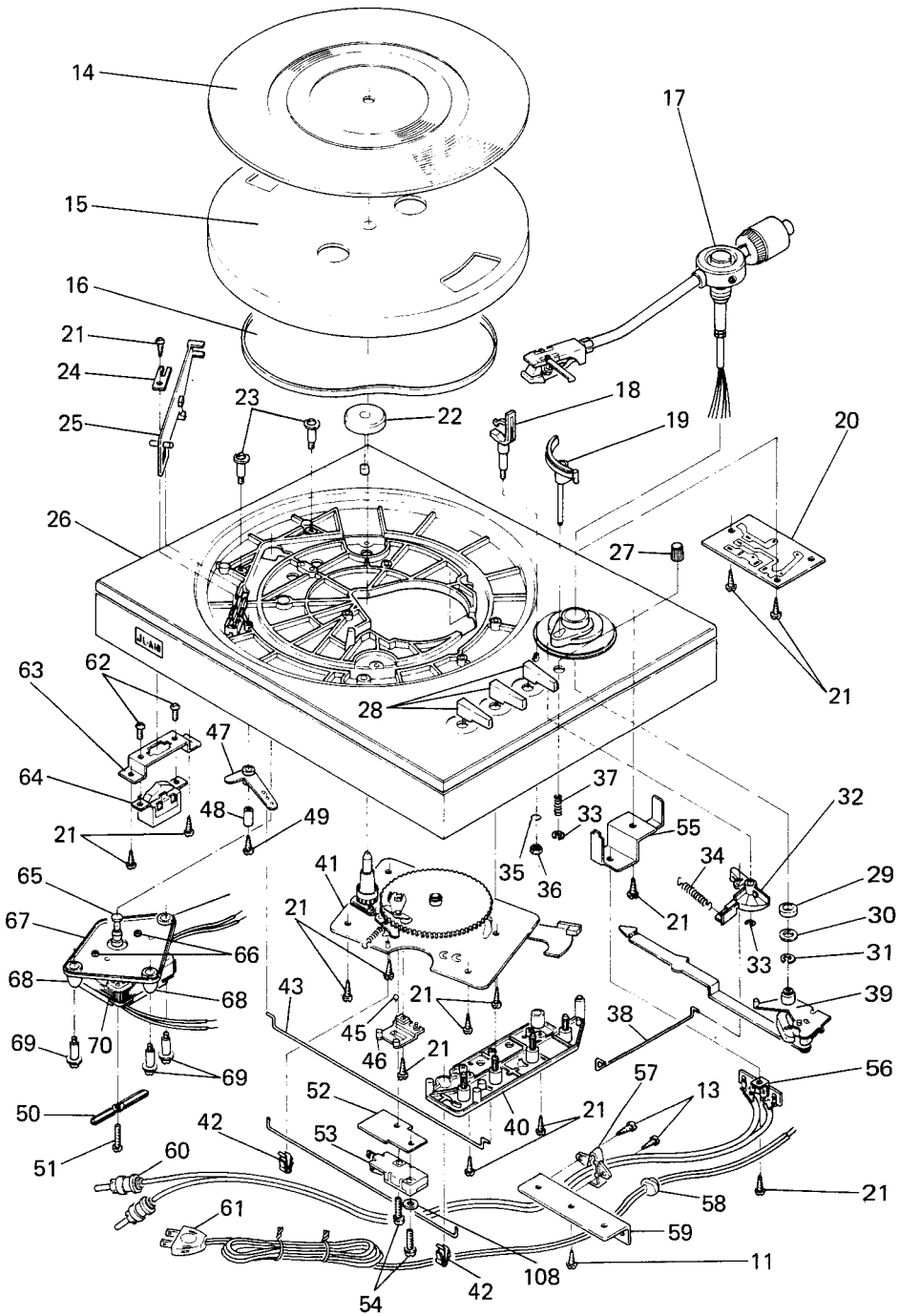


Fig. 18

List of Parts for Replacement ②

NO.	PARTS NO.	PARTS NAME	REMARKS	Q'ty
14	*E22362-001	Rubber Mat		1
15	E1971-001	Platter		1
16	G30005	Belt		1
17	Refer to Table 1	Tonearm Assy	Refer to Page 11, Table 1 : Page 13	1
18	E60982-001	Arm Rest Assy		1
19	*E61472-001	Elevator Assy		1
20	Refer to Table 1	C. Board Assy	Table 1 : Page 13	1
21	SBSB3008Z	Tapping Screw		20
22	E48820-001	EP Adaptor		1
23	E49633-003	Motor Holder		2
24	*E61474-001	Stopper		1
25	*E61473-001	Shifter		1
26	Refer to Table 1	Cabinet Assy	Table 1 : Page 13	1
27	E60341-001	Knob Assy		1
28	*E61574-001	Knob Assy		3
29	*E61531-001	Spacer		1
30	Q03091-145	Washer		1
31	G41221-2	C Ring		1
32	E49595-003	Elevator Cam		1
33	REE3000	E Ring		2
34	E49596-001	Spring		1
35	WLS4000N	Lock Washer		1
36	NTB4000BS	Nut		1
37	E49650-001	Spring		1
38	E60986-001	Rod		1
40	E34502-001	Knob Base Assy	Refer to Page 10	1
41	*A1001	Base Assy	Refer to Page 10	1
42	E49679-001	Rod Holder		2
43	E60985-001	Rod		1
44	G41505-1	Steel Ball		1
45	E61095-001	Rod		1
46	E49873-002	Ball Holder		1
47	E61094-001	Shifter Lever		1
48	*E61475-001	Bushing		1
49	SBSB3016Z	Tapping Screw		1
50	E47203-004	Wire Clamp		1
51	SBSB3008Z	Tapping Screw		1
52	Refer to Table 1	Insulator Sheet	Table 1 : Page 13	1
53	〃	Micro Switch	〃	1
54	〃	Screw	〃	2
55	E61271-001	Bracket		1
56	QML1310-041	Lug Strip Assy		1
57	E33944-001	Cord Stopper		1
58	QHS3876-162	Cord Stopper		1
59	*E61277-004	Cord Stopper Bracket		1
60	Refer to Table 1	Signal Cord	Table 1 : Page 13	1
61	〃	Power Cord	〃	1
62	〃	Screw	〃	2
63	〃	Bracket	〃	1
64	〃	Seesaw Switch	〃	1
65	E60962-001	Pulley	50Hz	1
	E60962-002	〃	60Hz	1
66	LPSP3008ZS	Assy Screw		2
67	E61096-001	Mounting Plate		1
68	E49631-003	Rubber Bushing		3
69	*E61530-001	Motor Holder		3
70	Refer to Table 1	AC Phono Motor	Table 1 : Page 13	1
108	〃	Washer		1

Note : * New Parts Item

Exploded View of Parts ③ (Knob Base Ass'y)

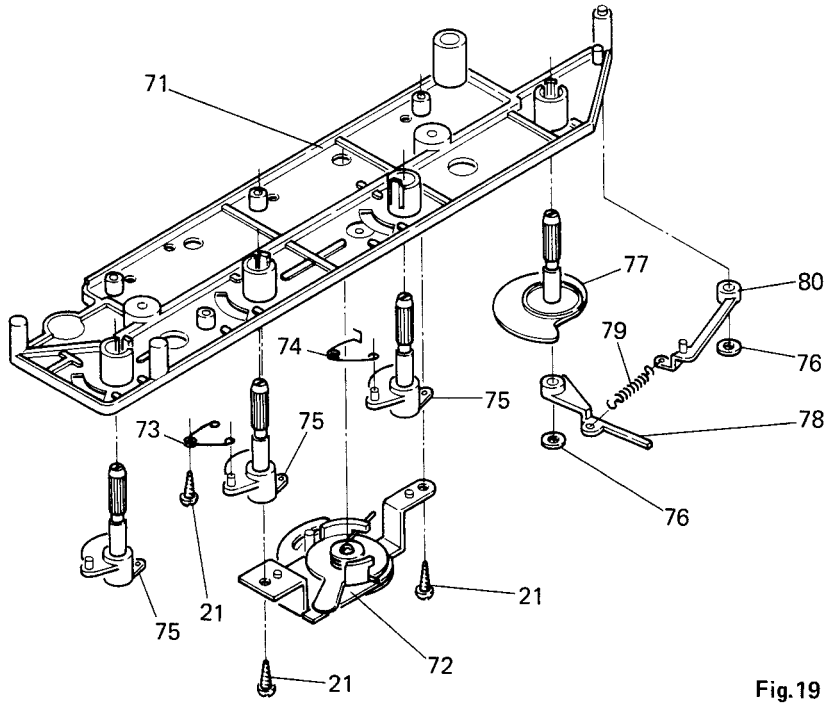


Fig.19

Exploded View of Parts ④ (Base Ass'y)

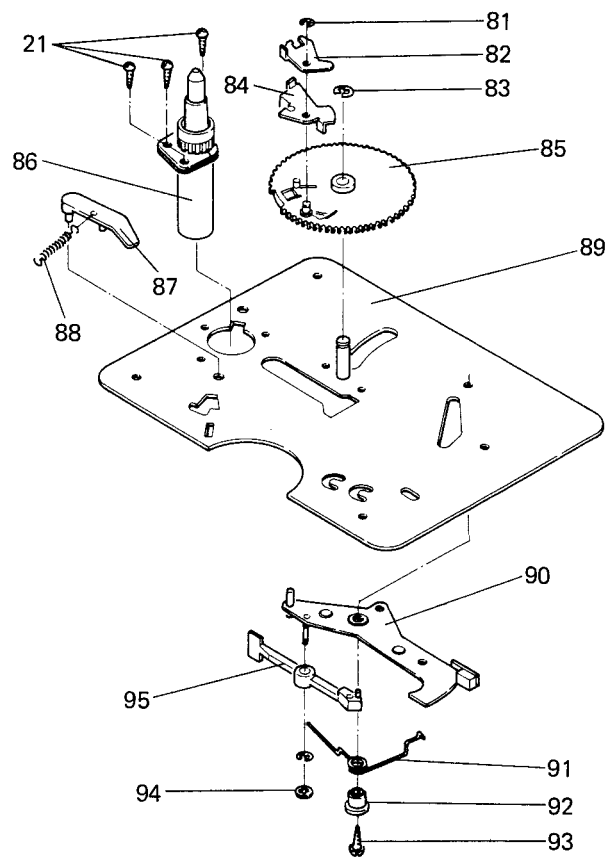


Fig. 20

Exploded View of Parts ⑤ (Pick-up)

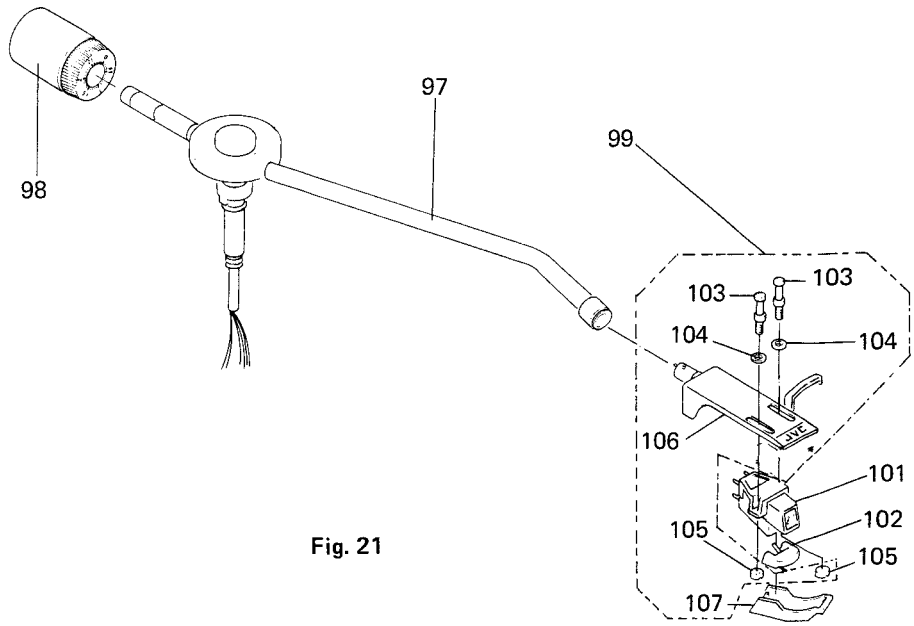


Fig. 21

List of Parts for Replacement ③~⑤

NO.	PARTS NO.	PARTS NAME	REMARKS	Q'TY
71	E34503-001	Knob Base		1
72	E34240-002	Cueing Assy		1
73	E60791-001	Spring		1
74	E49608-002	Spring		1
75	E34504-001	Knob Shaft		3
76	E60912-001	Speed Nut		2
77	E60981-001	Cam Shaft		1
78	E49603-001	I.F.C. Lever		1
79	E49605-001	I.F.C. Spring		1
80	E49604-001	Leading Lever		1
81	REE2000	E Ring		1
82	E49627-001	Engagement Pawl		1
83	REE5000	E Ring		1
84	E49626-001	Lower Trip Pawl		1
85	E21656-001	Main Gear		1
86	E33901-004	Spindle Assy		1
87	E49623-002	Reject Lever		1
88	E49651-001	Spring		1
89	E34085-002	Base Sub Assy		1
90	E49613-004	R. Lever Assy		1
91	E60796-001	Spring		1
92	E49607-001	Bushing		1
93	LPSP3012ZS	Assy Screw		1
94	RDS3000F	C.S. Ring		1
95	E49657-002	Switch Lever		1
97	E22081-002	Pipe Arm Assy		1
98	E34534-002	Main Weight Assy		1
99	Refer to Table 1	Head Shell Assy	Table 1 : Page 13	1
101	〃	Cartridge	〃	1
102	〃	Needle Assy		1
103	EG83492	Screw		2
104	EG82971	Washer		2
105	E60503-001	Nut		2
106	Refer to Table 1	Head Case Assy	Table 1 : Page 13	1
107	E34268-001	Needle Cover		1

Note : * New Parts Item

Final Packing Ass'y

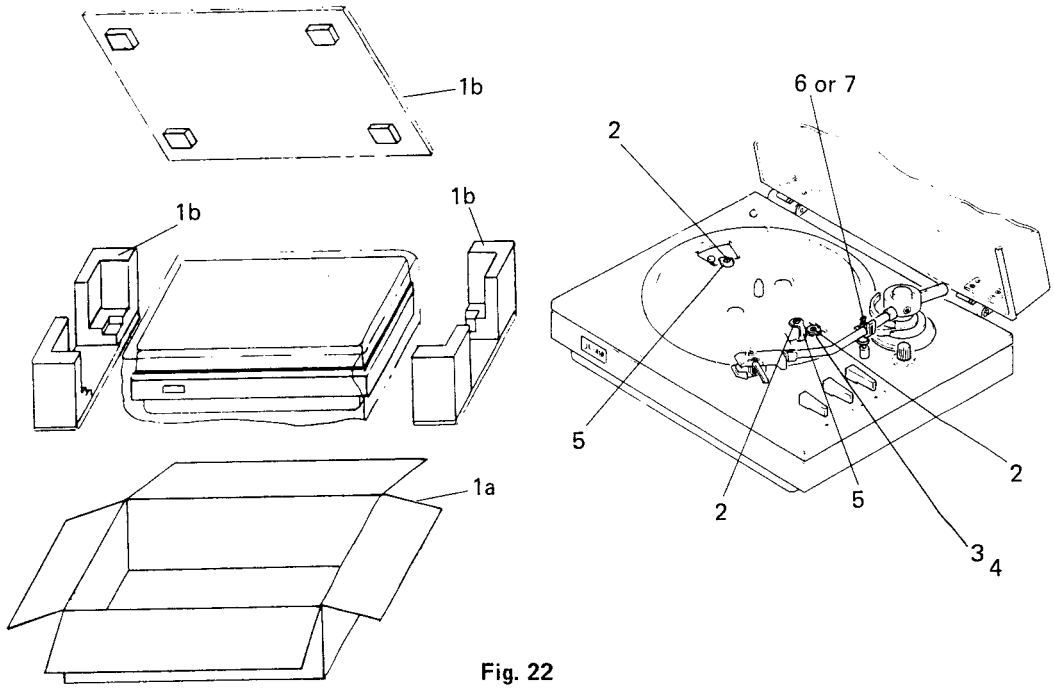


Fig. 22

NO.	PARTS NO.	PARTS NAME	REMARKS	Q'TY
1a	*JL-A20-PK	Carton Box		1
1b	*JL-A20-NZ	Fillers	Pad included	1
2	*E61546-001	Screw		3
3	G6771-1	Caution Tag	For Pick-up Main Weight	1
4	Q03091-113	Washer		1
5	E33939-001	Platter Protector		2
6	Q04141-1-J	Wire Clamp	50Hz	1
7	Q04141-2-J	"	60Hz	1

Accessories

NO.	PARTS NO.	PARTS NAME	REMARKS	Q'TY
1	*E30580-552A	Inst. Book	(English)	1
	*E30580-553A	"	(French)	1
	*E30580-554A	"	(German)	1
2	Refer to Table 1	Inst. Sheet	Table 1 : Page 13	1
3	"	Warranty Card	"	1
4	"	Service Pro.	"	1
5	"	Do It Better	"	1
6	E48220-001	EP Adaptor		1
7	E60962-001	Pulley	(50Hz Pulley)	1
	E60962-002	"	(60Hz)	1
8	E64209-003	Envelope	(for 50Hz Pulley)	1
	E64209-004	"	(for 60Hz Pulley)	1
9	E64207-001	"	(for Inst. Book)	1

Note : * New Parts Item

Table 1 (Parts List with Specified Number for Designated Areas)

No.	Parts Name	For U.S.A. and Canada	For U.S. Military Market and Other Areas	For Europe Continent and Australia	For U.K.
1	Tonearm Assy	* ARM-513	* MP-166SB (U.S. Military Market) * MP-166S (Other Areas)	* MP-166S	* ARM-513B
20	P.C. Board Assy	TSC-60B (to include Capa. QFH72BM-473) (U.S.A.) TSG-60G (to include Capa. QFA72BM-473) (Canada)	TSC-60C (to include Capa. QFH53AM-473)	TSC-60E (to include Capa. QFZ9007-473)	TSC-61ABS (to include Capa. QFZ9007-473BS)
26	Cabinet Assy W/Hinge	* E22238-003	* E22238-003	* E22238-003	* E22238-002
52	Insulator Sheet		E60964-002	E60964-002	
53	Micro Switch	QSM1V01-018	QSM1V01-018	QSM1V01-022	QSM1V01-022BS
54	Screw	LPSP3014ZS	LPSP3014ZS	SPKP3015S	SPKP3015S
60	Signal Cord	* E03697-002	* G30062-005 (U.S. Military Market) E03697-002 (Other Areas)	* E03697-002	* E03697-002
61	Power Cord	QMP1200-244	QMP1200-294	QMP3910-244 (Europe Continent) QMP2500-200 (Australia)	QMP9017-007BS
62	Screw				SSSP3006NS
63	Bracket				E61157-002
64	Seesaw Switch				QSE2235-203BS
70	AC Phono Motor	* M712L	M712B	* M712M	* M712MBS
99	Headshell Assy	* E34972-001	* E34972-001	* E34972-001	* E34991-001
101	Cartridge	Optional	MD1025Z	MD1025Z	Optional
102	Needle Assy	Optional	4DT-Z1S (U.S. Military Market) DT-Z1S (Other Areas)	DT-Z1S	Optional
106	Head Case Assy	* E34971-001	* E34971-001	* E34971-001	* E34990-001
Accessories					
2	Inst Sheet		E34705-001		
3	Warranty Card	BT-20022B (U.S.A.) BT-20025 (Canada)	BT-2001 (U.S. Military Market)	BT-20029 (Australia)	BT-20013BS
4	Service Pro.	BT-20023 (U.S.A.)			
5	Do It Better	BT-20024 (U.S.A.)			

Note : * New Parts Item

Schematic Diagram

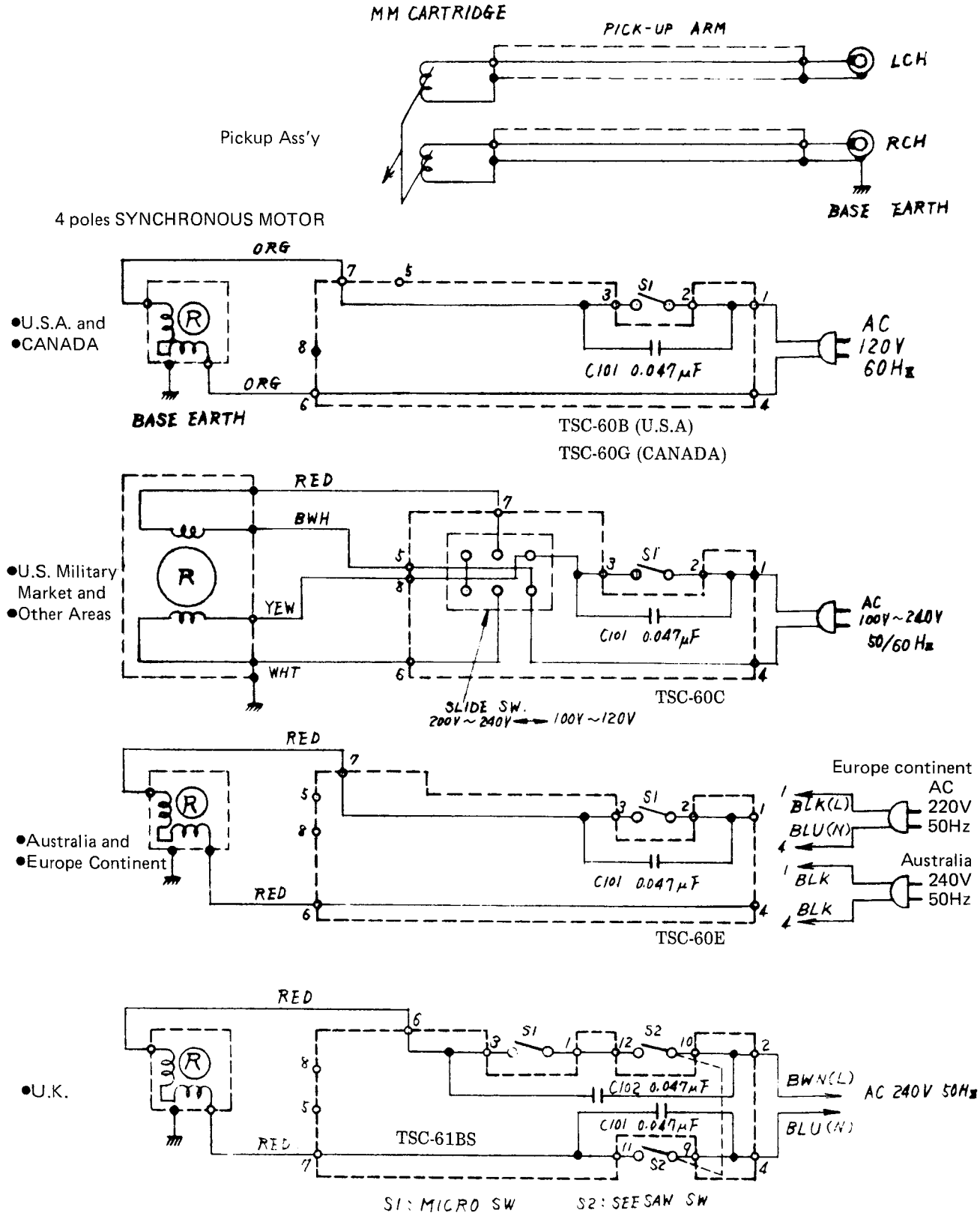


Fig. 23

Troubleshooting

Sympton	Cause	Remedies
Platter does not rotate when tonearm is moved to a record disk manually	1. Motor is not powered.	* Check that the power cord is plugged in. * Check for disconnected wires or defective soldering.
	2. Drive belt is incorrectly installed.	* Check if switch is damaged. * Check that the belt is correctly placed over the pulley.
	3. Motor is defective.	* Replace the motor if the motor does not rotate when power is supplied to the motor terminals.
	4. Switch lever remains in contact with switch.	* Adjust the switch lever for correct clearance.
Platter speed is not correct.	1. Motor bearings are too tight. 2. Pulley.	* Replace. * Check that the correct pulley is attached according to the local power frequency (50Hz, 60Hz).
	3. Drive belt.	* Check if the drive belt slips on the pulley when the speed is changed. If it slips, clean the pulley and belt.
Arm lifter moves incorrectly.	1. The lead wires of the tonearm are too tight or tangled. 2. The tonearm pipe slips on elevator	* Slacken the lead wires to avoid any unwanted force on the tonearm pivot. * Wipe the elevator face.
Change cycle will not stop.	1. Trip lever and engagement shoe of the main gear malfunction.	* Check that trip lever returns after completing the change cycle, and that the engagement shoe moves smoothly and freely.
No sound is reproduced while playing.	1. Cartridge is defective. 2. Wiring is not correct. 3. Stylus is defective. 4. Amplifier is defective.	* Replace. * Check the wiring. * Replace.
Stylus does not follow the groove correctly.	1. Dust or foreign matter is in the record groove.	* Clean.
	2. Stylus is dirty or defective.	* Clean or replace.
	3. Lead wires in the tonearm are tangled or too tight.	* Slacken the wires.
	4. Tracking force is abnormal.	* Adjust.
	5. Tonearm bearings have too much friction.	* Replace tonearm.
Motor rumble is heard while playing.	1. Motor is defective. 2. Motor is mounted incorrectly.	* Check if any part of motor is in contact with the base or mechanism. * Check if mounting board is in contact with the motor board.
Tonearm does not lead-out.	1. The lead-out groove is not standard.	* It may not lead out when old or non-standard records such as film records are used. * Lead-out will not occur if the pitch of the lead out groove is less than 3mm.
	2. Stylus does not advance.	* Check if the tracking force is correct. Check if trip mechanism does not operate smoothly. * Check if the stylus tip is damaged or dirty.
Reject does not work.	1. Engagement shoe is not pushed away fully.	* Check the trip mechanism.

JVC

VICTOR COMPANY OF JAPAN, LIMITED
STEREO DIVISION

POWER SPECIFICATIONS TABLE 2

Countries	Line Voltage & Frequency	Power Consumption
U.S.A., CANADA	AC 120V, 60Hz	13 watts
EUROPE CONTINENT	AC 220V~, 50Hz	13 watts
U.K., AUSTRALIA	AC 240V~, 50Hz	13 watts
U.S. MILITARY MARKET	AC 110~120V/220~240V Selectable, 50/60Hz	9 watts
OTHER AREAS	AC 110~120V/220~240V Selectable, 50/60Hz	13 watts

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